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2011 AGILE (SCRUM) WORKSHOP

Baltimore, MD

14 – 15 November 2011

Agenda

Acquisition of Information Technology, Ronald W. Pontius, Director, C2 Programs and Policy OASD(NII)/DOD CIO

Agile Processes Example

Manifesto for Agile Software Development

Patriot Excalibur (PEX), Kelly Goshorn, ESC/HSGG

Using Agile Software Development to Create an Operational Testing Tool, Jennifer Ockerman

NDIA
National Defense Industrial Association

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AGILE (SCRUM) WORKSHOP

Sponsored by the C4ISR Division of NDIA

HYATT REGENCY BALTIMORE ▸ BALTIMORE, MD

NOVEMBER 14-15, 2011

EVENT #2750

WWW.NDIA.ORG/MEETINGS/2750

MONDAY, NOVEMBER 14

12:00 pm - 5:30 pm Registration Open - Constellation Ballroom Foyer (2nd Floor)

1:00 pm - 1:10 pm **WELCOME REMARKS** - Constellation A Ballroom
- Dr. Steve Kimmel, *Senior Vice President, Alion Science & Technology; C4ISR Division Chairman, NDIA*
- Mr. Michael Kutch, *Senior Engineer, Joint Interoperability Test Command*

1:10 pm - 1:40 pm **KEYNOTE ADDRESS**
- Ms. Jennifer Walsmith, *Senior Acquisition Executive, National Security Agency*

1:40 pm - 1:50 pm **FACILITATION TEAM INTRODUCTION**
- Mr. Michael Kutch, *Senior Engineer, Joint Interoperability Test Command*
- Mrs. Suzanne Miller, *Technical Staff, Software Engineering Institute*

1:50 pm - 2:00 pm **AGILE UNIVERSITY: PRODUCT BACKLOG VS. REQUIREMENTS DOCUMENT IN AN OPEN SPACE FORMAT**
- Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*

2:00 pm - 2:45 pm **OPEN SPACE SESSION**
Discuss current impediments to Agile in the workplace. Create a backlog of user stories for workshop development

2:45 pm - 3:15 pm Afternoon Break

JENNIFER S. WALSMITH
National Security Agency Senior Acquisition Executive

Ms. Walsmith has served as the Senior Acquisition Executive for the NSA since January 2006. In this role, she is responsible for all procurements in support of NSA's Signals Intelligence and Information Assurance missions. While managing the Agency's multi-billion dollar budget, she has focused on balancing acquisition discipline with mission agility. She has also placed a strong focus on leveraging industry expertise to maintain NSA's technological advantage.

SUZANNE MILLER
Technical Staff, Software Engineering Institute

Mrs. Suzanne (SuZ) Miller is a senior member of the technical staff at the Software Engineering Institute of Carnegie Mellon University, working in the Acquisition Support Program's US Air Force team. Her most recent research has been focused on understanding the opportunities and barriers for using agile development methods in DoD settings.

JAMES BOSTON
Software Development Team Lead, USAF PEX

Lt Col James Boston, USAF (Ret) is the Software Development Team Lead working on a squadron automation toolset for the USAF called Patriot Excalibur (PEX). PEX is an extraordinarily flexible operations management tool used by over 670 different Air Force squadrons executing a wide variety of missions. The program has used Agile development methodologies for over eight years, making it a pioneer in the practices in DoD.

3:15 pm - 3:25 pm **AGILE UNIVERSITY: RELEASE PLANNING**
- Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*

3:25 pm - 3:55 pm **SESSION RESULTS & SPRINT GROUP SELECTIONS**
Develop sprint groups to address impediments identified in Open Space Session. Break into sprint groups

3:55 pm - 4:05 pm **AGILE UNIVERSITY: SPRINT PLANNING**
- Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*

4:05 pm - 4:45 pm **SPRINT GROUP INTRODUCTION & PLANNING**
Meet your Scrum Masters! Plan sprint group work for Tuesday

4:45 pm - 5:00 pm **AGILE UNIVERSITY: MINI RETROSPECTIVE**
- Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*

5:00 pm - 5:30 pm **AGILE WILL WORK IN DOD: THREE EXAMPLES**
- Ms. Kelly Goshorn, *Patriot Excalibur (PEX) Program Manager, U.S. Air Force*
- Ms. Susi McKee, *Operational C2 Instrumentation System (OC2IS) Program Manager, U.S. Air Force*
- Mr. Dan Gahafer, *Forge.mil Program Manager, DoD DISA*

5:30 pm - 6:30 pm Networking Reception Hosted by NDIA - Harborview Room

GREG SHARP
Software Development Team Lead, USAF PEX

Mr. Greg Sharp is a Software Development Team Lead working on a squadron automation toolset for the USAF, Patriot Excalibur (PEX). The product is a web-based, line of business application used to automate, track and organize daily activities in USAF squadrons. The program is widely recognized as one of the few that have successfully implemented Agile Development within DoD.

SUSI MCKEE
OC2IS Program Manager, U.S. Air Force

Susana V. McKee has 25 years of DoD T&E experience. She is the 505th Test and Evaluation Group Technical Advisor and currently focuses on capabilities development and integration for the 505th Command and Control Wing (CCW) sites at Hurlburt Field, FL; Nellis AFB, NV; and Kirtland AFB, NM. Previously, Ms McKee was a Technical Advisor at the 505 CCW. That was preceded by her role as the Director of Test for the 605th Test and Evaluation Squadron's C2 and ISR testing efforts.

KELLY GOSHORN
Program Manager, USAF Flight Scheduling

Ms. Goshorn is the Program Manager for USAF Flight Scheduling programs including PEX Squadron Automation and netcentric Commanders Decision Services winglevel effort. Goshorn pioneered the use of Agile Software Development melded with CMMI Level 3 discipline. Her programs put the end-user in control of priorities and delivered capabilities resulting in a highly adaptive development process that is quick to adapt to evolving requirements.

TUESDAY, NOVEMBER 15

7:30 am - 5:00 pm	Registration Open - Constellation Ballroom Foyer
7:30 am - 8:30 am	Continental Breakfast
8:30 am - 8:45 am	**WELCOME REMARKS & DAY 1 REVIEW** - Constellation A Ballroom ▸ Mrs. Suzanne Miller, *Technical Staff, Software Engineering Institute*
8:45 am - 8:55 am	**AGILE UNIVERSITY: WHAT'S "DONE"?** ▸ Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*
8:55 am - 10:00 am	**SPRINT GROUP WORK — "IDEAS FOR CHANGE"** *Build integrated solutions that address the previously identified impediments. Create presentations for "ideas for change"*
10:00 am - 10:15 am	Morning Break
10:15 am - 10:25 am	**AGILE UNIVERSITY: IMPORTANCE OF A "DEMO" AND HOW IT RELATES TO OUR TASK** ▸ Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*
10:25 am - 11:00 am	**"DEMO" FROM SPRINT GROUPS**
11:00 am - 11:10 am	**AGILE UNIVERSITY: RETROSPECTIVES** ▸ Mr. Lee Henson, *Chief Agile Enthusiast, Davisbase Consulting*
11:10 am - 11:45 am	**SPRINT RETROSPECTIVE — FISH BOWL EXERCISE** *Participants discuss how it felt to work in an agile environment. What solutions and outcomes were identified by the experience that can be brought back to the workplace?*

STEVEN HUTCHISON
Principal Deputy, Developmental T&E

Dr. Hutchison assumed the duties as the Principal Deputy, Developmental Test and Evaluation on 9 October 2011. Prior to this assignment, Dr. Hutchison served as the Test and Evaluation (T&E) Executive for the Defense Information Systems Agency. Dr. Hutchison has also served in the office of the Director, Operational Test and Evaluation (DOT&E) and the Army Test and Evaluation Command (ATEC).

MARK KRZYSKO
Deputy Director for Enterprise Information & OSD Studies

In his position, Mr. Krzysko directs data governance, technical transformation and shared services efforts to make timely, authoritative acquisition information available to support oversight of DoDs major programs; a portfolio totaling more than $1.6 trillion of investment funds over the lifecycle of the programs. Mr. Krzysko also oversees Federally Funded Research and Development Centers and University Affiliated Research Centers.

MICHAEL KUTCH
Senior Engineer, Joint Interoperability Test Command

Mr. Michael Kutch is a patterns expert and a systems engineer working for the Joint Interoperability Test Command at Fort Huachuca, Arizona. Kutch received his BS in electrical engineering from the Virginia Polytechnic and State University in 1988, and his MS in systems engineering from the Southern Methodist University in Dallas. He is currently working with agility in testing and organizations, and started the JITC Agile Center of Excellence.

11:45 am - 12:00 pm **AGILE COACHES SUMMARY & TEAM EXPERIENCE**
- Mr. Michael Kutch, *Senior Engineer, Joint Interoperability Test Command*

12:00 pm - 1:00 pm Luncheon - Pisces Ballroom (15th Floor)

1:00 pm - 2:00 pm **GOVERNMENT POLICY MAKERS DISCUSS DEMOS**
- Dr. Steven Hutchison, *Principal Deputy, Developmental T&E*
- Mr. Mark Krzysko, *Deputy Director for Enterprise Information & OSD Studies*

2:00 pm - 3:00 pm **NDAA SEC 804 PROGRESS**
- Mr. Ronald W. Pontius, *Director, C2 Programs & Policy, Office of the Assistant Secretary of Defense for Networks and Information Integration*

3:00 pm - 3:15 pm **WORKSHOP SUMMARY**
- Dr. Steve Kimmel, *Senior Vice President, Corporate Development, Alion Science & Technology; NDIA C4ISR Division Chairman*

3:15 pm - 3:30 pm Afternoon Break

3:30 pm - 4:30 pm **OPEN SPACE GROUP WORK**
Networking group discussions. Firming relationships for further contact.

4:30 pm - 4:45 pm **OPEN SPACE GROUP OUTBRIEFS**

4:45 pm - 5:00 pm **CLOSING REMARKS & WORKSHOP SUMMARY**
- Dr. Steve Kimmel, *Senior Vice President, Corporate Development, Alion Science & Technology; NDIA C4ISR Division Chairman*

STEVE KIMMEL
Senior VP, Corporate Development, Alion Science & Technology

Dr. Kimmel directs Alion's professional engineering and technology solutions strategic efforts associated with homeland and defense security, operations support, modeling and simulation, information and wireless communication, technology integration, chemical-biotechnology-nuclear engineering, human terrain and intelligence, explosive sciences, marine and naval engineering.

LEE HENSON
Chief Agile Enthusiast, Davisbase Consulting

Lee's 12 years of experience spans a broad array of software production roles and responsibilities. He is currently one of just over 100 Certified Scrum Trainers worldwide and has Certified well over 1000 ScrumMasters and Product Owners. Lee has worked hands on as a GUI web developer, quality assurance analyst, automated test engineer, senior product manager, senior project manager, ScrumMaster, agile coach, consultant, and ADDIE training professional.

RONALD PONTIUS
Director, C2 Programs & Policy, OASD (NII)

Mr. Pontius is responsible for the development and implementation of Department-wide C2 policy and direction, and executes the responsibilities of the Principal Staff Assistant for C2 on behalf of the ASD (NII). He is responsible for conducting program and cross-program evaluations of all Service and Agency C2 activities in areas of systems engineering, system acquisition, resource management, and systems integration and test.

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VERSIONONE®
Agile Made Easier

VersionOne is recognized by agile practitioners as the leader in agile management tools. By simplifying the process of planning and tracking agile software projects, we help development teams consistently deliver software faster.

Since 2002, companies such as Adobe, Boeing, Intuit, Lilly, Lockheed Martin, Oppenheimer, Qualcomm, Sabre and Siemens have turned to VersionOne to help provide greater value to their customers. Today more than 30,000 teams in over 170 countries use VersionOne's agile project management tools to streamline and standardize their agile development efforts.

Built specifically for Agile methods, VersionOne offers the most feature rich, easy to use agile management tool available. Using VersionOne, all project stakeholders can work together to easily coordinate project plans, priorities and progress. Providing over 60 reports and dashboards, no other Agile management tool delivers more project visibility and insight.

Whether you're a small, single agile team just getting started with agile development or a multi-team, global enterprise, with VersionOne you'll get the best tools in the industry backed by pioneers in agile planning and management.

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ITEA Technology Review July 2011

Using Agile Software Development to Create an Operational Testing Tool

21 Jul 2011

F.T. Case (ft.case@jhuapl.edu)
Jennifer Ockerman (jennifer.ockerman@jhuapl.edu)

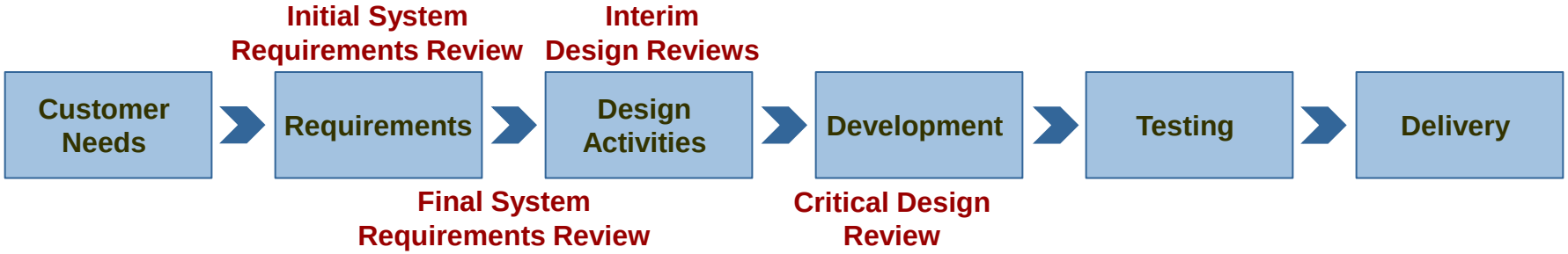
The Johns Hopkins University
APPLIED PHYSICS LABORATORY

Motivation

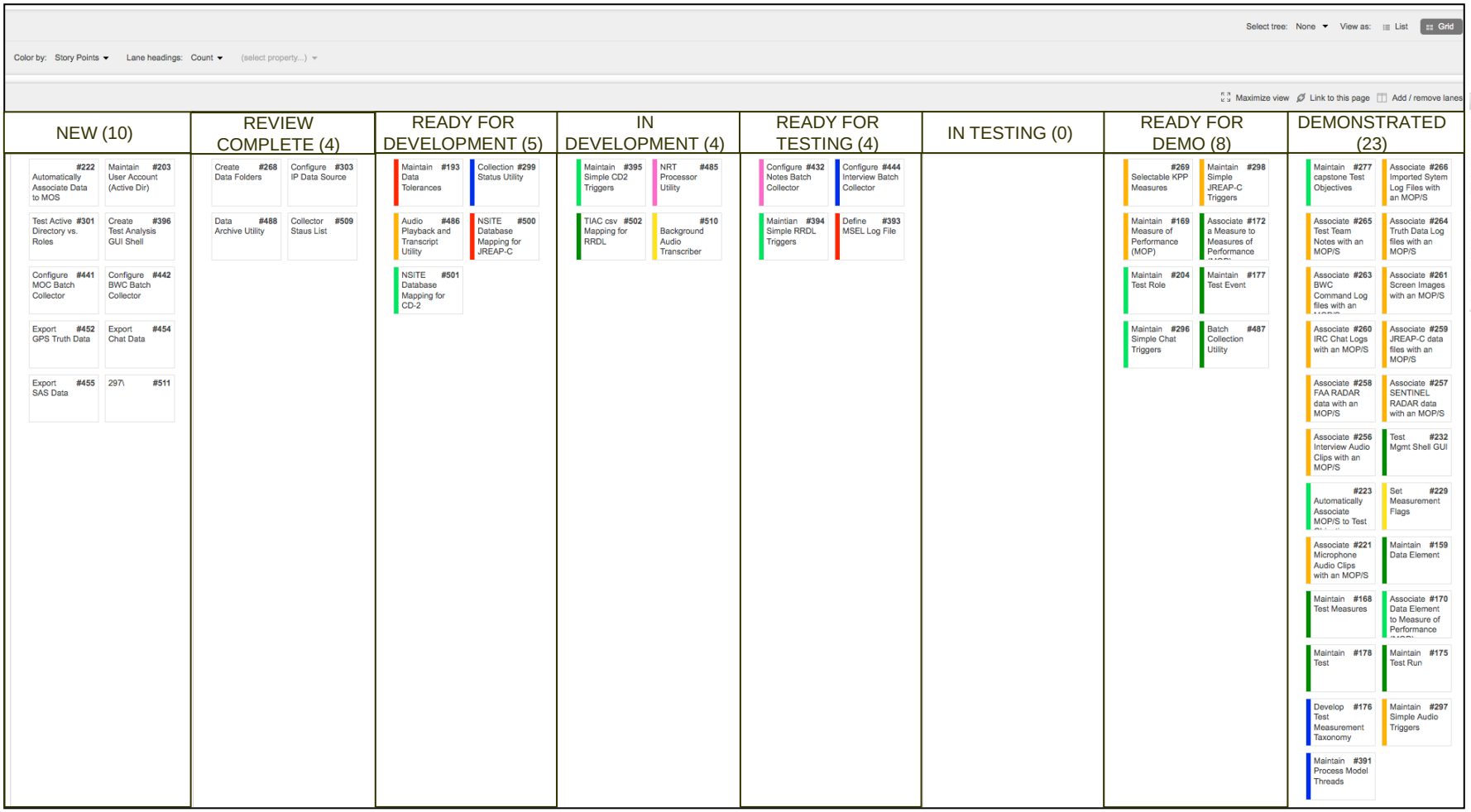
- **Rapid product development – User needs definition to concept development to capability delivery within two years**
- **Classic Systems Engineering method did not seem appropriate for rapid product development**
  - Not enough time to complete the SE cycle
  - Not enough money to fund the work required
- **Blended classic Systems Engineering with an agile design and development approach**
  - Meet rapid design and development needs but
  - still deal with expectations of sponsor for traditional acquisition deliverables

The Blended Approach

- Determined customer needs through multiple knowledge elicitation sessions
- Created total system requirements and top-level design upfront for sponsor approval
- Used agile methodology know as Scrum during system development
- Each sprint had a defined focus and product



The System's Work Packages



Contents of a Work Package

Collection Status Utility

(v50 - Latest version, last modified 21 days ago)

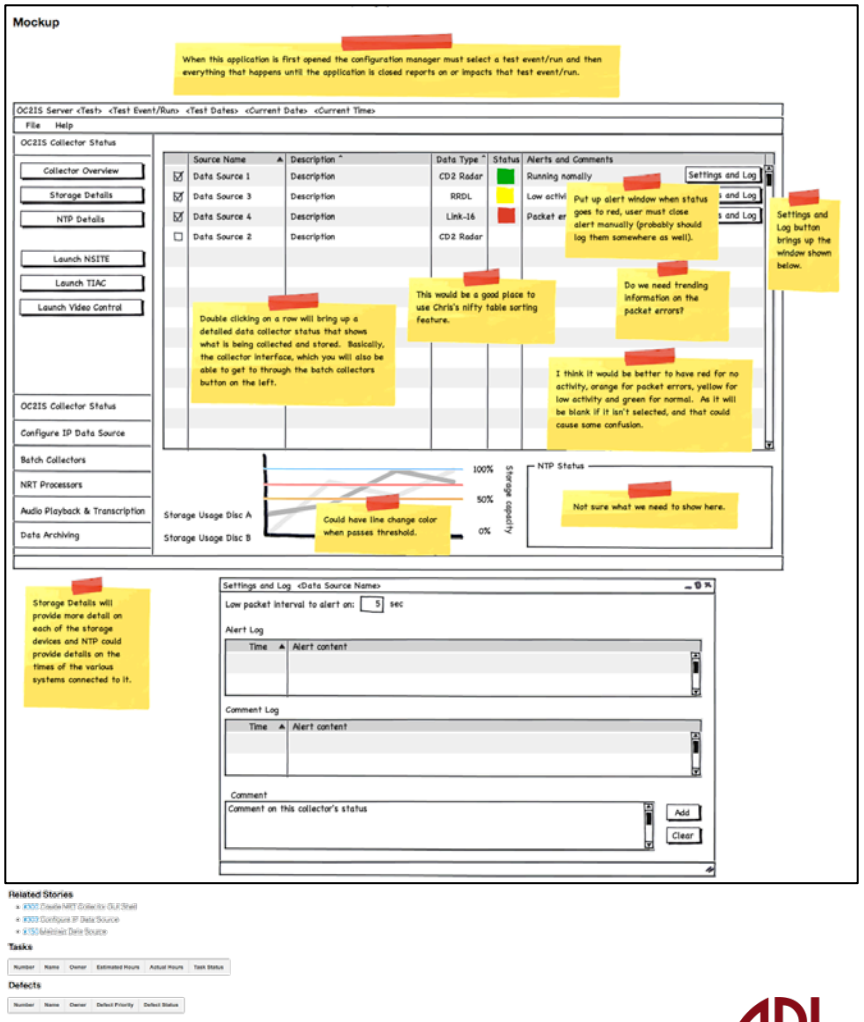
(no tags set)

Narrative

As a Configuration Manager, I can select a Collector Status utility, so that I can monitor the real-time collection process.

Acceptance Criteria

1. Verify that, the Video File Configurator allows the Configuration Manager to:
   - set up (name) a destination directory for video files.
   - tag (via file re-naming convention?) files from the video logger w/ Test Event & Test Run.
   - assign a (position/audio source) name to each (of four) audio logger channels.
   - modify current configuration (display naming structure)
   - clear current configuration
2. Verify that, the Audio File Configurator allows the Configuration Manager to:
   - set up (name) a destination directory for audio files.
   - tag (via file re-naming convention?) files from the audio logger w/ Test Event & Test Run.
   - assign a (position/audio source) name to each (of 16) audio logger channels.
   - select (filter) un-wanted channels from being stored in the OC2IS file system – OC2IS ignores these channels.
   - modify current configuration
   - clear current configuration
3. Verify that the User is able to see the amount of storage space used (in GB) vs. capacity in the drives the RT collectors are writing to.
   - up to three (TH) or four (OBJ) storage drive locations on the OC2IS system should be able to be monitored.
   - this status (scrolling bar graph?) should change colors
     - at 50% unused capacity (YELLOW)
     - at 25% unused capacity (RED)
4. Verify that there is an Network Time Protocol (NTP) Server area that allows the Configuration Manager to:
   - see the current NTP Server time being broadcast to all machines,
   - allows the Configuration Manager to call the NTP server configuration window (via http: script?),
   - see the status of NTP polling of all machines on the OTS network.
5. Verify that the NTP Server polls all machines on the OTS network every 10 seconds and chaecks to see that:
   - time is accurate to the second for the last 5 poll cycles – GREEN
   - there is a time error > 1sec for up to two of the last 5 polling cycles – YELLOW
   - there is a time error > 2sec or an error >1sec for 3 or more of the last 5 polling cycles.

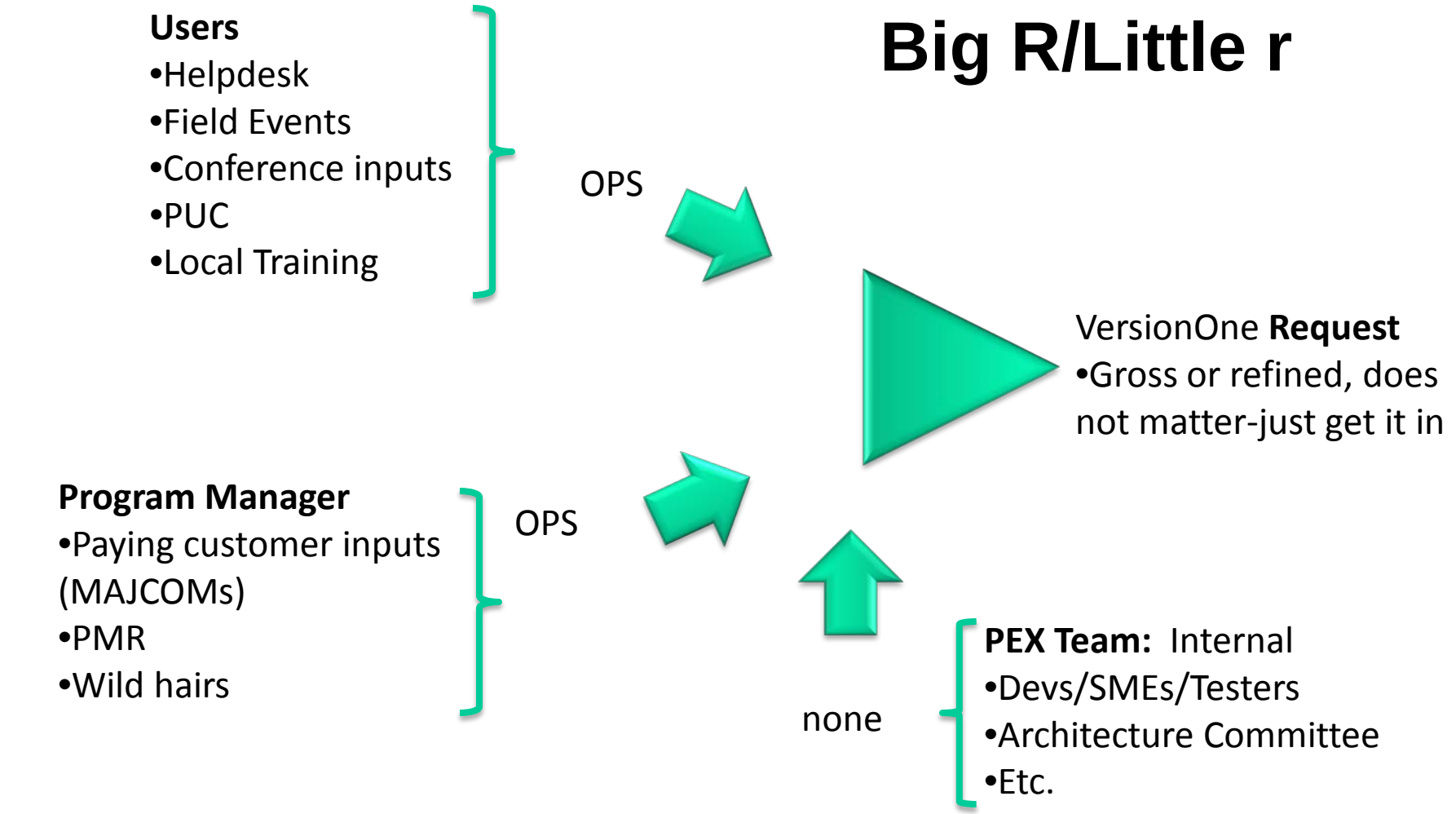


Successes

- **Satisfied sponsor need for requirement and configuration item documentation in early stages**
- **Established a collaborative development lab to maintain contact with customer/sponsor/remote team members during project execution**
  - Telecon lines, web-based collaboration tools
- **Self-synchronization of the team – shift roles and activities to meet current needs**
  - Example: Hardware architect also tests code
- **Product owner, developers and tester in same lab during same hours to facilitate communication beyond daily update meetings**
  - All but one of the team members are part-time – work afternoon together in lab.
- **Adaptable to new customer needs and suggestions during development**

AGILE PROCESSES EXAMPLE

Requirements: Where do they come from?



Future implementation, not Current release

Requirements: Where do they come from?

POT Team
- Release Planning converted to stories
- Execution generates stories

POT

Dev Team
- Revealed during execution
- Revealed during iteration test

POT

Little r

VersionOne **Stories**
- Not "just get it in"
- Specific to support release effort
- No wild hairs

"Welcome changing requirements, even late in development. Agile processes harness change for the warfighter's competitive advantage."

POT team has primary responsibility to keep effort aligned with priorities during execution

Requirements Process timeline: How we Filter/Prioritize/Refine

OPS:
- Consolidates V1 requests
- Generates 2YR plan inputs
- Prepare recommendations for PM

POT:
- Creates ROM estimates
- Generates 2YR plan inputs/refinements
- Prepares recommendations for PM
  - Draft Roadmap

R

Pre-release Planning	Release Planning	Release Execution	Post-release

Program Manger:
- Coordinates with Stakeholders
- Conducts PMR
- Obtains Stakeholder Concurrence
- Approves Roadmap

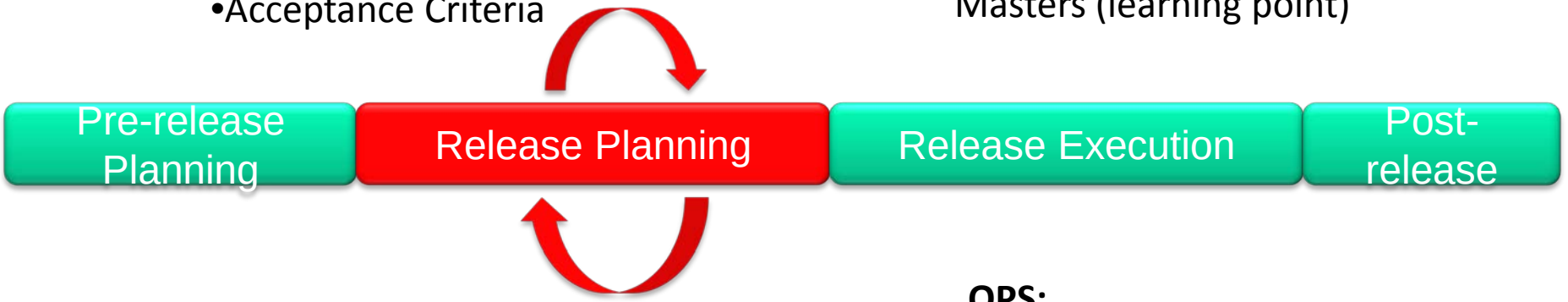
"Business people and developers must work together daily throughout the project."

Collaboration

Requirements Process timeline: How we Filter/Prioritize/Refine

POT: (SMEs and Developers)
- Based on Approved Roadmap
- Decomposes Requirements by Function (Vertical Slice)
- Prepares for Release Planning Meeting
  - Requirements and Design meetings
  - Acceptance Criteria

POT conducts Release Planning Meetings
- Aligns Team workload with strategic intent
- Establishes initial workflow for the release with the Teams' input through Scrum Masters (learning point)



Development Teams
- Provides Inputs through design meetings
- Creates SketchFlows
- Iterative process resulting in

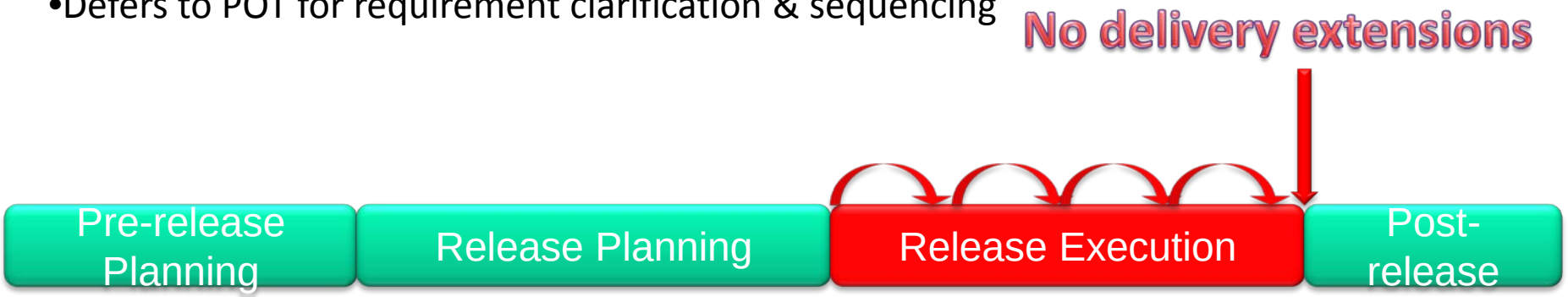
OPS:
- Refines understanding of requirements in response to POT

Requirements Process timeline: How we Filter/Prioritize/Refine

r ▶ R ▶ R

Development Teams

- Executes delivery of functionality
- Organic testers and SMEs expose additional r
- Defers to POT for requirement clarification & sequencing



POT focus shifts to subsequent release's

- Pre-release Planning

"Our highest priority is to satisfy the warfighter through early and continuous delivery of valuable software."

timeline: How do we know we have met them?

Development Teams

- Iteration Demonstrations
- Iteration Retrospectives
- Were Acceptance Criteria adequately defined?
- *Existing Requirements are validated at Iteration Test, not Systems Test*

R

OPS Team

- Conducts Systems Test against validated acceptance criteria
- Uses Regression Tests based on the actual ATs created for each slice of functionality
- Systems Test is part of Release Execution and ends on time

Government Customer

- Working groups
  - Warfighter comes to PEX office
- PEX Users Conference
- High Level Verification
- Beta Test Sight for Warfighter
- What does the PM think?

Requirements Process timeline:

Development Teams
•Release Retrospective

OPS Team
•Release Retrospective
•Installation and Training lead to new requests

Independent Testing Events
•46 TS risk mitigation
•SSI DT&E/FDE
•Working with AFOTEC

R

How do we know we have met them?

Pre-release Planning	Release Planning	Release Execution	Post-release

Release Candidate sites (HLV)
•Feedback
•New r entered into VersionOne as Requests

onePEX Design focus:

- **Compatibility/Consistency** across PEX: *standards*
- **Usability** for its target audience: the warfighter
- **Intuitive work flow**

Why? Why? Why?

To achieve the desired collaboration we emphasize use of the tool: SketchFlow

Design flow:

Developers:
•Resolve differences between SketchFlow and Story Acceptance Criteria with **POT**
•Resolve differences between Sketchflow and Acceptance Tests with **onePEX Design**
•Tasks are design
•Iteration demonstrations are not design meetings but they do expose your work

onePEX Design: (Developers)
•Keeps SharePoint current
•Meets regularly to ensure consistency across the effort (Thursday after Planning Meeting)
•Write defects for prioritization and sequencing

Embedded SMEs:
•New requirements are provided to **POT**
•Design issues are provided to **onePEX Design** for resolution

"Simplicity--the art of maximizing the amount of work not done--is essential."

Development

"Working software is the primary measure of progress."

Some fundamentals about Agile:

post work, visibly

stop starting, start finishing

done is done, begin

Pre-release Planning	Release Planning	Release Execution	Post-release

Development

"Working software is the primary measure of progress."

Development Teams

- Participates in Requirements and Design meetings in accordance with the roadmap
- Shapes estimates in the Release Planning Meeting
- Help establish the delivery sequence
- Review Acceptance Criteria, SketchFlow and Acceptance Tests to prepare for writing tasks

"The best architectures, requirements, and designs emerge from self-organizing teams."

"Continuous attention to technical excellence and good design enhances agility."

Development

"Working software is the primary measure of progress."

No delivery extensions

PEX Team
It's show time

"Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale."

Integrity - Service - Excellence

PATRIOT EXCALIBUR (PEX)

Kelly Goshorn
ESC/HSGG

Date: 14 Nov 11

OUTLINE

The purpose of this panel is to share PM experiences executing Agile development in DoD – to "help others to do it"

- **Why did PEX go Agile?**
- **External Customers: Manage Stakeholder Expectations**
- **Contract**
- **Changing Practices**

Why Agile?

- **2003**
  - **Traditional waterfall: documentation nightmare**
  - **Fielded our first version, came up short**
  - **Late in delivery**
  - **Funding at risk**
- **We had to do something different, or die**

Message: Crisis facilitates change, encourages "risky" moves

Manage Stakeholder Expectations

- Main focus of PM's energy
- Stakeholders include the users: meet the warfighter's needs
- Involve them:
  - Membership on the team--SMEs
  - In defining the requirements
  - Establishing priorities
  - PUC
  - Working Groups
  - PMR

Message: People support that which they help to create

Program Contract

- **Manage the Program, not the Contract**
- **Contract is Cost Plus Award Fee, Software Engineering Support (4 different contracts)**
  - **If you specify a function in a contract, that's what you get**

    (whether you need it or not)
  - **Requires a solid process to add detail to the "Big R"**

Message: You are not going to establish the collaborative relationship with your contractor required to deliver the goods by locking requirements delivery into a contract

Changing Practices

- 2003-took the hit on schedule, instituted Agile
  - Small team comprised of developers and SME
- 2005-growth led to expansion of team
  - Operations Subject Matter Experts led growth
- 2008-Broke team into smaller teams to align assets with objectives
- 2011-Applied lessons on large (100+ people) organization employment of Agile, reorganized to adopt appropriate Agile practices

Message: Practices change depending on environment, technology and product. Values and Principles are constant

Manifesto for Agile Software Development

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

The Coming American

Bring me men to match my mountains;
Bring me men to match my plains,
--Men with empires in their purpose,
And new eras in their brains.

Sam Walter Foss, 1894

BRING ME MEN...
Yes, Sir.
No, Sir.
Sir, may I ask a question?
Sir, may I make a statement?

No excuse, Sir!

…to change the world

Working software is the primary measure of progress.